

Zigadenus elegans

Mountain Death Camas

by Kathy Lloyd, Montana Native Plant Society

Meriwether Lewis collected mountain death camas, also known as showy death camas, on July 7, 1806. Six other plant species were also collected and pressed on that day, making it one of the most botanically productive days in Montana in terms of specimens that are still in existence. On that day, Lewis and a party of nine other explorers made their way up the Blackfoot River drainage and crossed the Continental Divide at present-day Lewis & Clark Pass. They were on their way to the headwaters of the Marias River, hoping to find it north of 50 degrees latitude. They were disappointed in that hope, and ran into other difficulties as well. When the party reached the cache they had buried at White Bear Island in 1805 they found all the plant specimens had been destroyed by high water. This cache included all the plants that were collected and pressed between Fort Mandan and the Great Falls of the Missouri in the spring and early summer of 1805. We will never know how many plant specimens were lost and can only imagine Lewis's disappointment at seeing all his painstaking and diligent work turned to mold.

The Lewis & Clark Herbarium at the Academy of Natural Sciences has the mountain death camas specimen that Lewis collected in Montana and it is remarkably well preserved. The flowers are intact and it is easy to tell what it is (unlike some of the other fragments in the herbarium). The herbarium sheet bears a label written by the German botanist Frederick Pursh that reads, "On the Cokahlaishkit R. Jul. 7th 1806." In his book, *Flora Americae Septentrionalis*, published in 1814, Pursh provides a full Latin description of the new species and says that Lewis collected the plant "On the waters of Cokahlaishkit river, near the Rocky-mountains." This refers to the Blackfoot River west of Lewis & Clark Pass in Lewis & Clark County.

In addition to collecting plants, traveling 32 miles over the Continental Divide and keeping the men on track, Lewis had time to write in his journal, "Reubin Fields wounded a moos deer this morning near our camp. my dog much worried....saw some sighn of buffaloe early this morning in the valley where we encamped last evening from which it appears that the buffaloe do sometimes penetrate these mountains a few miles...after we encamped Drewyer killed two beaver and shot third which bit his knee very badly and escaped." Lewis's observation of buffalo west of the Continental Divide at their campsite of July 6th puts buffalo about two miles west of present-day Lincoln, Montana. It is interesting because buffalo are typically a species of the plains east of the Divide, as Lewis well knew.

Mountain death camas still goes by the scientific name given to it by Frederick Pursh, *Zigadenus elegans*. A member of the lily family (Liliaceae), mountain death camas has the look typical of lilies, with narrow, grass-like leaves with parallel veins, and flower parts often in threes and sixes. The plant is from six to 28 inches in height with mostly basal leaves, although an occasional leaf may occur on the unbranched stem. The flowers are arranged in racemes and are greenish-white in color with six stamens and three separate styles. The styles remain on the dry capsule and look like beaks. The flowers

have three petals and three sepals that look very much alike so the flowers appear to have six petals. There is a heart-shaped gland near the base of the floral tepals (sepals and petals). The petals are egg-shaped and about ¼ inch long. The scientific name comes from the Greek *zugon* or yoke, and *aden*, meaning gland. This is a reference to the paired (yoked) glands found on this species.

Mountain death camas can be found from forests and moist meadows to rocky slopes and open grasslands in the montane and alpine regions. It is present in most of Canada and the western United States, except for California. It is even present in most of the Great Plains states and is considered, unfortunately, extirpated in Nebraska.

Although mountain death camas is not mentioned in the journals kept by various members of the expedition, edible blue camas, *Camassia quamash*, is mentioned often. The two species are both members of the lily family and have linear, grass-like leaves, but the resemblance stops there. Native Americans were well versed in practical botany and weren't likely to mistake the two plants, even when they were not flowering. Early white explorers and trappers may not have been so astute and may have tried eating death camas, most likely with negative results! Death camas got its name for a reason and the toxic alkaloid zygadenine is certainly capable of causing death, in animals and humans. However, most cases of poisoning seem to be from a related species, *Zigadenus venenosus*, which is common in meadows and grazing lands. Sheep seem to be the most susceptible to poisoning and numerous deaths have been attributed to death camas. Cattle and horses can also be poisoned, but pigs seem to be immune. Poisoning occurs when animals eat the fresh leaves, stems and flowers. The symptoms of poisoning include excess salivation and nausea followed by vomiting and a lowered body temperature. The animal may appear weak and have difficulty breathing. A coma may follow, leading to death.

Among native tribes, the literature describes a broad knowledge of the poisonous principles in mountain death camas. Several tribes used the plant externally as an athletic rubdown and muscle strengthener and the Navajo used it for mad coyote bites. It was used as an analgesic by creating a salve from the baked root and applying the paste to sore feet or backs.

Today in Montana, mountain death camas is an attractive addition to our higher elevation grasslands and open forests. Understanding the history and culture of this plant adds an additional dimension to our appreciation of Montana's native flora.